

Weitzler, Ellen

From: Kavanah, Brian W <Brian.W.Kavanah@maine.gov>
Sent: Monday, September 16, 2013 2:37 PM
To: Weitzler, Ellen
Cc: Margerum, Mark T; Sheehan, Bill J; Wood, Gregg; Pamela.D.Parker@maine.gov
Subject: RE: adopted revision of phenol for consumption of water + organism

Thanks Ellen,

As per your phone message regarding this issue, and the email below, we agree that we miscalculated the criteria for phenol. Maine DEP's intent is to correct this mathematical error during the next opportunity for rulemaking.

Brian Kavanah

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From: Weitzler, Ellen [mailto:Weitzler.Ellen@epa.gov]
Sent: Wednesday, September 04, 2013 1:28 PM
To: Kavanah, Brian W
Cc: Margerum, Mark T
Subject: FW: adopted revision of phenol for consumption of water + organism

Hi Brian,

Here's the phenol calculation. That you sent me for phenol. As you can see, Bob calculated the criteria for water + organisms as follows:

$$AWQC = RfD \times RSC \times [(BW/DI) + (FCR \times BCF)] \times 1000 \text{ ug/mg}$$

However, the correct formula is:

$$AWQC = RfD \times RSC \times \frac{BW}{DI + (FCR \times BCR)} \times 1000 \text{ ug/mg}$$

I can see where he might have misinterpreted the reference he used. An additional parenthesis might have helped in the expression of the equation in that reference. Nevertheless, the units just don't work out the way it was calculated and the value is higher than it would be if calculated correctly.

Best regards

Ellen

Ellen Weitzler, P.E.
Water Quality Standards Coordinator

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From: Kavanah, Brian W [<mailto:Brian.W.Kavanah@maine.gov>]
Sent: Monday, July 22, 2013 5:12 PM
To: Weitzler, Ellen; Margerum, Mark T
Subject: RE: adopted revision of phenol for consumption of water + organism

Hi Ellen,

I looked through Bob's rulemaking files and found this. Page 2 has his calculations. Please let me know if this clarifies the issue for you.

Thanks.

From: Weitzler, Ellen [<mailto:Weitzler.Ellen@epa.gov>]
Sent: Monday, July 22, 2013 9:52 AM
To: Margerum, Mark T
Cc: Kavanah, Brian W
Subject: adopted revision of phenol for consumption of water + organism

Hi Mark,

I'm working on the approval letter for acrolein and phenol in state waters.

Using the EPA methodologies and Maine's fish consumption rate of 32.4 gm/day, I was able to calculate human health criteria for acrolein that agreed with Maine's adopted revisions to 3.9 ug/L (for consumption of water + organisms) and 5.0 (for consumption of organisms only). I was also able to calculate the human health criteria for phenol for consumption of organisms only that agreed with Maine's adopted revision to 462,963 ug/L.

However, I was not able to derive Maine's adopted revision of the phenol criteria for consumption of water + organisms to 10,514 ug/L.

Using the following criteria derivation equation for Ambient Water Quality Criteria (AWQC)

$$AWQC = RfD \times RSC \times [BW / (DI + (FI \times BAF))] \text{ (see parameter definitions and values below)}$$

leads to a criteria of 10,267 ug/L.

Please let me know if you have made any other assumptions regarding the parameters below or any other revision to the methodology to account for the difference.

Thanks

Ellen

Human Health Criteria for Phenol for consumption of Water and Organisms	
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RfD (Reference Dose) in mg/kg-day	0.3
RSC (Relative Source Contribution to account for other sources of exposure) as a % of total exposure	1
BW (Human Body Weight for average adult) in kg	70
DI (Drinking Water Intake for average adult) in L/day	2
FI (fish Intake) in kg/day	0.0324
BAF (bioaccumulation Factor) in L/kg (or BCF if no BAF)	1.4
AWQC in mg/L	10,267

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